

Predictors of Mental Health Care Utilization in Veterans With Post-Traumatic Stress Disorder Symptoms and Hazardous Drinking

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ABSTRACT Objectives: Describe outpatient mental health service use in a sample of recent combat Veterans with post-traumatic stress disorder (PTSD) symptoms and hazardous alcohol use and investigate predictors of mental health care utilization. Methods: In this prospective study, 126 Veterans with full or subthreshold PTSD and hazardous alcohol use completed a baseline assessment and reported mental health service use through a 12-month follow-up period. Logistic regressions were used to identify factors predicting mental health care utilization. Results: Veterans who were employed were 63% less likely to use outpatient mental health care in the 12 months following baseline. Additionally, for each 1-point increase in negative mental health care beliefs, participants were 70% less likely to use outpatient mental health care. For each 1-point worsening in social support and leisure functioning, participants were 2.2 times more likely to use outpatient mental health care. Conclusions: The current study indicates that negative mental health beliefs are barriers to mental health care while unemployment and poor social support/leisure functioning are predictors of mental health care utilization for recent combat Veterans with PTSD symptoms and hazardous alcohol use. Patient and system level interventions for these factors are discussed to guide efforts to improve mental health care among this high-need population.

INTRODUCTION

Post-traumatic stress disorder (PTSD) and hazardous alcohol use are common, frequently comorbid, and associated with decreased physical and mental health functioning within the U.S. Veteran and military population.¹⁻⁴ The Veterans' Health Administration (VHA) has been active in improving availability of evidence-based treatments for PTSD and substance use.⁵⁻⁷ However, significant numbers of Veterans do not receive mental health care.⁸⁻¹¹ Also, among Veterans who use mental health services, treatment retention is low.^{9,11,12}

In order to understand and improve mental health care utilization, it is important to consider barriers and facilitators within a theoretical model incorporating environmental, socioeconomic, and personal factors, such as the Behavioral Model.¹³ The original model introduced and defined the concepts of predisposing characteristics, enabling resources, and need as predictors of health services utilization.¹³ Predisposing characteristics impact the likelihood of experiencing and perceiving a need for mental health care. Demographics, social structure (employment, income, and education), and health beliefs (mental health beliefs and stigma) are predisposing characteristics that have been previously associated with mental health care utilization.^{9,14-16} Enabling resources

include personal, family, and community resources that facilitate access. The enabling resources such as perceived stigma from others, concerns and beliefs about VHA care, occupational functioning, social/leisure functioning, family functioning, and financial resources have also been previously associated with mental health care utilization.¹⁴⁻¹⁹ Both patient-perceived need (e.g., accurate labeling and self-report of mental health diagnoses) and evaluated need (e.g., provider evaluation of functioning and symptoms) are known to be related to mental health care utilization.^{10,14}

Although the Behavioral Model has strong empirical support, much of the previous research is lacking in three primary areas. First, research applying this model typically includes broad samples and generally suggests that all domains are important factors to consider in mental health care utilization.^{15,16,18} However, the specific elements that emerge as significant predictors of utilization among Veterans differ across studies, potentially due to the heterogeneity within samples. As predictors of utilization vary based on sample characteristics, studies focused on specific samples are more informative regarding what interventions may help to improve health care utilization for a given population. In this regard, the current study is novel in that it investigates barriers and facilitators within a sample of Veterans with PTSD and hazardous drinking. Second, many of the studies applying the Behavioral Model rely solely on administrative data, which miss components of the model measuring Veterans' experience including stigma, mental health beliefs, perceptions of community and personal resources, and self-perception of need. Third, previous research has often used cross-sectional designs, which cannot inform whether significant differences are predictive of or due to mental health care utilization. We believe that the current study adds to the literature by identifying predictors

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of mental health care utilization within a specific, high-need sample, employing a prospective design, and incorporating clinical interview and self-report data about Veterans' beliefs, experience of stigma, enabling resources, and need.

The purpose of the current study is to apply a theory-based model to investigate outpatient mental health care utilization in a high-risk population of Veterans with access to services. Specifically, the current study identifies population characteristics that predict prospective outpatient mental health services utilization with the goal of informing efforts to improve future health care utilization among Veterans with PTSD symptoms and hazardous alcohol use who are receiving VHA primary care services.

METHODS

Participants and Procedures

Participants were Global War on Terrorism (including Operation Enduring Freedom, Operation Iraqi Freedom, and Operation New Dawn) combat Veterans enrolled in primary care in the Veterans Affairs (VA) Upstate New York Healthcare Network and referred by their primary care providers. Participants were eligible if they reported both risky drinking in the past year (≥ 8 for men or ≥ 7 for women) on the Alcohol Use Identification Test (AUDIT)²⁰ and a subthreshold or full PTSD diagnosis on the Clinician-Administered PTSD Scale (CAPS).²¹ Participants experiencing a traumatic event related to a combat deployment, one re-experiencing symptom, and either three avoidance symptoms or two hyperarousal symptoms with functional impairment met criteria for subthreshold PTSD.²² Participants were excluded if they demonstrated evidence of suicidality (per a screen created for this study assessing current and past suicidal ideation, plans, attempts, and protective factors), psychotic symptoms (per medical chart diagnosis), or gross cognitive impairment (as measured by a score of 16 or higher on the Blessed Orientation and Memory Test²³). After the baseline interview, participants completed follow-up assessments in person or over the phone at 1, 6, and 12 months post baseline and were reimbursed \$50 for the baseline, 6-month, and 12-month assessments and \$25 for the 1-month assessment (\$175 total). This study recruited 149 eligible participants and 126 completed the final assessment.

Data were collected between March 2010 and November 2013. This study was approved by the Syracuse VA Institutional Review Board. The principles outlined in the Declaration of Helsinki were followed. All participants provided informed consent before study enrollment.

Measures

Demographics and Mental Health Diagnoses

The baseline interview included demographics (predisposing variables) and asked participants to list known mental health diagnoses. This list was used to capture self-identified diag-

noses (perceived need variable). Self-identified diagnoses were coded as accurate if participants reported having PTSD or an alcohol-related disorder and the disorder was confirmed by diagnostic interviews, or if participants reported having no disorder and neither PTSD or alcohol use disorder were present.

PTSD Severity

The CAPS for Diagnostic and Statistical Manual of Mental Disorders (Fourth Edition) (DSM-IV)²¹ was administered at the baseline interview and assesses the 17 core DSM-IV-TR PTSD symptoms.²⁴ Frequency and intensity of each symptom were evaluated on a 0–4 scale. The CAPS has good psychometric properties and excellent diagnostic utility.²⁵ The CAPS was used to assess inclusion criteria and to calculate total past month PTSD severity (evaluated need variable).

Alcohol Use Severity

The AUDIT²⁶ is an interviewer-administered 10-question measure that asks participants to rate past year alcohol use. It has good test–retest reliability and strong convergent validity with other commonly used measures.²⁷ The AUDIT was used to assess inclusion criteria and to calculate a past year alcohol use severity score (evaluated need variable).

Alcohol Use Disorder Diagnosis

The alcohol use modules of the Structured Clinical Interview for the DSM-IV-TR SCID I/P²⁸ were administered to assess DSM-IV-TR²⁴ alcohol use criteria to establish presence or absence of lifetime alcohol use diagnoses (contributed to a perceived need variable).

Barriers to Mental Health Care Seeking

The beliefs and stigma measure assessed multiple domains of mental health care barriers including mental health beliefs, mental health stigma, and VHA-specific concerns. The measure contains 73 items that ask participants to rate statements about mental health care seeking (e.g., “A problem would have to be really bad for me to seek healthcare”) on a scale from 1 (strongly disagree) to 5 (strongly agree). This is an unvalidated version of the Endorsed and Anticipated Stigma Inventory,²⁹ which was validated after the current study was concluded. We developed scales matching published constructs based on item content. Two members of the research team independently coded each of the items using specified constructs (mental health beliefs, self-reported mental health stigma, perceived mental health stigma in others, and VHA concerns). The VHA concerns category was added by the first author following review of the initial coding to resolve discrepancies in coding a specific set of items. The addition of this category resulted in 100% concordance in the final categories. Average scale scores were used to predict mental health care utilization (predisposing variables).

Mental Health Care Utilization

At each assessment, interviewers administered the semi-structured longitudinal interval follow-up evaluation (LIFE).³⁰ The treatment utilization section of the LIFE serves as the primary outcome measure. The LIFE provided weekly appointment counts for specific types and locations of outpatient mental health care for 52 weeks following baseline. The interviewer asks participants to retrospectively report treatment use over a specified interval, and interviewers prompted participants and confirmed treatment utilization using VA or Department of Defense (DOD) electronic medical records during the interview. Participants were encouraged to bring and use cues including planners, calendars, and appointment lists to their assessments to reference during the interviews for non-VA/DOD appointments. These data were summarized as treatment utilizers or nonutilizers for each type (i.e., general mental health, substance use, PTSD, Primary Care-Mental Health Integration, and medication management) and location (i.e., VHA, civilian, Vet Center, and military). This variable was transformed into a dichotomous variable rather than using the frequency because of concerns about potential inaccuracies in exact number of sessions recorded for non-VA/DOD services, to avoid violations of the normality due to skew commonly found in count data, and to allow for the calculation of odds ratios.

Health-Related Quality of Life

The Short Form-12 (SF-12)^{31,32} is a self-report questionnaire used to assess quality of life. Participants were asked to rate the quality of their health and emotional states, and level of interference. The SF-12 has good validity in addition to high internal consistency.^{31,32} The SF-12 Mental Health Component Score and Physical Health Component Score were used as evaluated need predictors of utilization.

Functioning and Resources

The Social Adjustment Scale Self-Report^{33,34} measures personal perceptions of functioning over the past 2 weeks with 54 items, and possesses good psychometric properties.³⁵ Eight subscales assess functional dimensions of work, social-leisure time, and family life. Average scores for the Social Adjustment Scale Self-Report occupational functioning (including work, housework, and student functioning), social-leisure functioning, family functioning, and the single-item regarding financial resources (range = 1–5 for all scales) were used as enabling resource predictors of utilization.

Data Analysis

IBM SPSS Statistics 22 (IBM Corporation, Armonk, New York) was used for analyses. Frequencies were generated for mental health care types and locations to document utilization. Logistic regressions were used to identify predictors of mental health care utilization. In order to reduce the likelihood of a type-2 error due to the large number of potential predictors

within the model, individual logistic regressions for predisposing characteristics, enabling resources, and need factors were conducted, then the statistically significant factors within each category were retained for the logistic regression testing the overall model.

RESULTS

Participants ($N = 124$) were predominantly male ($n = 107$, 86%) and White ($n = 107$, 86%). See Table I for additional demographics. Most, 84% ($n = 104$), of the sample met full criteria for PTSD with the remainder reporting subthreshold PTSD symptoms. Most participants met criteria for a lifetime alcohol disorder with 87% ($n = 109$) meeting for dependence and 4% ($n = 5$) meeting for abuse. Approximately half (58%) of the sample received outpatient mental health care during the 12-month follow-up period. Of those, 95% received VHA services as at least a component of their mental health care. Only one-fourth were receiving PTSD-specific services and only 6% received treatment for any

TABLE I. Demographics and Sample Description ($N = 124$)

Construct	<i>n</i>	%
Predisposing Characteristics		
Demographic		
Age (Mean ± SD)	30.3 ± 8.2	—
Female	17	14
White Race	107	86
Social Structure		
Employed	68	55
Income (Mean ± SD of Scale Below)	1.8 ± 1.1	—
\$40,000 and Below (1)	73	59
\$40,000–\$60,000 (2)	19	15
\$60,000–\$80,000 (3)	16	13
\$80,000 or More (4)	16	13
Education (Mean ± SD of Scale Below)	2.1 ± 0.7	—
Some High School–High School Graduate (1)	20	16
Some College (2)	85	69
College Graduate (3)	9	7
Some Postgraduate Education and Higher (4)	10	8
Need		
Perceived		
Accurate Self-Report Presence/Absence PTSD Diagnosis	79	64
Accurate Self-Report Presence/Absence AUD Diagnosis	69	56
Accurate Self-Report PTSD/AUD Diagnosis Combined	46	37
Self-Identified a Mental Health Problem	87	70
Evaluated		
AUD Severity ^a (Mean ± SD)	15.3 ± 6.1	—
PTSD Severity ^b (Mean ± SD)	66.3 ± 20.5	—
Overall Physical Health ^c (Mean ± SD)	46.8 ± 9.5	—
Overall Mental Health ^c (Mean ± SD)	40.1 ± 10.2	—

AUD, alcohol use disorder. ^aPossible AUDIT scores range from 0 to 40 with higher scores indicating more severe alcohol-related concerns. ^bPossible CAPS scores range from 0 to 136 with higher scores indicating more severe PTSD symptoms. ^cPossible SF-12v2 Physical Health Component Score and Mental Health Component Score range from 0 to 100 with higher scores indicating better health.

TABLE II. Outpatient Mental Health Care Utilization Types and Rates*

<i>n</i> = 126 (Study Completers)	VHA		Civilian		Vet Center		Military		Any Setting	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
General Mental Health Treatment	45	36	8	6	9	7	0	0	51	41
Substance Use Treatment	8	6	1	1	1	1	0	0	8	6
PTSD Treatment	27	21	2	2	2	2	0	0	31	25
PC-MHI Treatment	16	13	n/a	n/a	n/a	n/a	n/a	n/a	16	13
Medication Management	39	31	0	0	0	0	1	1	40	32
Any Type of Outpatient Mental Health Care	70	56	9	7	10	8	1	1	73	58

n/a, not applicable; PC-MHI, Primary Care-Mental Health Integration. *These numbers and percentages represent the individuals who attended at least one appointment of the specified type and location during this 12 months post baseline.

kind of substance use concern. See Table II for frequencies of mental health services utilization.

Table III lists each variable included in the predisposing, enabling, or need model. Within predisposing characteristics, employment and mental health beliefs significantly predicted subsequent mental health care utilization. Specifically, employed individuals were 68% less likely to use mental health care in the 12 months following baseline. Additionally, for each 1-point increase in negative mental health care beliefs, participants were 63% less likely to use mental health care in the 12 months following baseline. Other predisposing

characteristics (age, sex, race, income, education, and personally held stigma) did not significantly predict mental health care utilization. Within enabling resources, concerns/beliefs about VHA care and social-leisure functioning significantly predicted subsequent mental health care utilization. For each 1-point increase in concerns and negative beliefs about VHA care, participants were 67% less likely to use mental health care in the 12 months following baseline. For each 1-point increase in poor social support and leisure functioning, participants were 2.5 times more likely to use mental health care in the 12 months following baseline. Other enabling resources (occupational functioning, family functioning, and financial resources) did not significantly predict mental health care utilization. Within need factors, self-identifying a mental health concern predicted subsequent mental health care utilization. Participants who did not identify a mental health concern were 85% less likely to use mental health care in the 12 months following baseline. Other need factors (accurate self-report of diagnoses, alcohol use severity, PTSD severity, overall physical health, and overall mental health) did not significantly predict mental health care utilization.

When considering the significant predictors from each domain of the Behavioral Model in an overall logistic regression model, the only variables that significantly predicted subsequent mental health care utilization were employment, mental health beliefs, and social support/leisure functioning (Table IV). Concerns/beliefs about VHA care and self-identification of a mental health concern were no longer significant in the final model. Employed individuals were 63% less likely to use mental health care in the 12 months

TABLE III. Individual Logistic Regressions

Construct	Wald df = 1	<i>p</i> Value	OR	95% CI for OR
Predisposing Characteristics				
Age	0.46	0.499	1.03	0.95–1.10
Sex	3.33	0.068	0.12	0.01–1.17
Race	1.41	0.235	0.40	0.09–1.80
Employment	5.75	0.016	0.32	0.13–0.81
Income	1.33	0.249	1.32	0.82–2.11
Education	0.33	0.563	0.83	0.45–1.54
Mental Health Beliefs	4.34	0.037	0.37	0.14–0.94
Personally Held Stigma	0.22	0.643	0.81	0.34–1.94
Enabling Resources				
Perceived Stigma in Others	0.32	0.575	1.15	0.71–1.88
VHA Concerns	4.26	0.039	0.33	0.12–0.95
Occupational Functioning	0.14	0.710	0.84	0.34–2.08
Social-Leisure Functioning	4.13	0.042	2.50	1.03–6.03
Family Functioning	0.001	0.978	1.01	0.39–2.62
Financial Resources	1.00	0.318	1.21	0.84–1.74
Need Factors				
Accurate Self-Report PTSD Diagnosis	0.85	0.356	1.98	0.46–8.50
Accurate Self-Report AUD Diagnosis	0.29	0.587	0.67	0.16–2.81
Accurate Self-Report PTSD and AUD Combined	0.01	0.942	0.94	0.16–5.46
Self-Identified Mental Health Concern	6.54	0.011	0.23	0.07–0.71
Alcohol Use Severity	1.04	0.307	0.96	0.88–1.04
PTSD Severity	2.62	0.106	1.02	1.00–1.06
Overall Physical Health	0.99	0.321	0.95	0.93–1.03
Overall Mental Health	0.42	0.515	0.98	0.93–1.04

CI, confidence interval; OR, odds ratio.

TABLE IV. Overall Behavioral Model Logistic Regression

Construct	Wald df = 1	<i>p</i> Value	OR	95% CI for OR
Employment	4.96	0.026	0.37	0.15–0.89
Mental Health Beliefs	8.41	0.004	0.30	0.13–0.68
VHA Concerns	0.08	0.785	1.18	0.36–3.88
Social-Leisure Functioning	5.40	0.020	2.26	1.14–4.51
Self-Identified a Mental Health Problem	2.39	0.122	0.48	0.19–1.22

CI, confidence interval; OR, odds ratio.

following baseline. Additionally, for each 1-point increase in negative mental health care beliefs, participants were 70% less likely to use mental health care in the 12 months following baseline. For each 1-point increase in poor social support and leisure functioning, participants were 2.2 times more likely to use mental health care in the 12 months following baseline.

DISCUSSION

This 12-month prospective study of outpatient mental health care utilization in Veterans, with PTSD symptoms and hazardous alcohol use, uses the Behavioral Model to explore barriers and facilitators of service utilization. Just over half of the sample used mental health care in the 12 months after the baseline assessment. Most of those individuals received VHA services as at least a component of their mental health care. However, few received PTSD and substance use specific services. The results indicate that although some mental health care predictors are important when you consider sub-components of the Behavioral Model individually (concerns/beliefs about VHA care and self-identification of a mental health concern), only unemployment, less negative mental health care beliefs, and poorer social-leisure functioning were associated with increased mental health care utilization in the broader framework.

The current study advances our understanding of use patterns, barriers, and facilitators to mental health care for Veterans with comorbid PTSD and problem drinking. Consistent with the Behavioral Model, negative mental health beliefs predicted less utilization. Negative mental health beliefs (examples from the current study include “Mental health treatment just makes things worse” and “If I had a mental health problem, I would just ‘suck it up’”) have been receiving increasing attention as a barrier to mental health care for Veterans.³⁶ Importantly, health beliefs represent an ideal target for interventions on an individual level as beliefs can be measured and targeted for change. In fact, two interventions have demonstrated efficacy for addressing mental health care beliefs to increase mental health care utilization, cognitive behavioral therapy for treatment seeking,^{37,38} and motivational interviewing.^{39,40} The current findings support the need to continue efforts to establish these interventions within the VA for use with this population through implementation research.

Inconsistent with the Behavioral Model, employment and social support-leisure functioning predicted utilization in the opposite direction. According to the Behavioral Model, employment is considered an indicator of higher social status, while social-leisure functioning and peer support is considered a personal enabling factor that facilitates access to services. Given the directionality of these results, we suggest alternate interpretations of these variables. Employment might be acting as barrier within the external environment because employed individuals are less available to attend treatment sessions. Unemployment might also be considered an indication of need, in that, individuals with more severe PTSD

or alcohol use may struggle with maintaining employment. Similarly, rather than an enabling resource, poorer social-leisure functioning may be indicative of more severe symptoms and thus increased need for treatment. In fact, PTSD and hazardous alcohol use are known to cause major impairment in occupational and social functioning.^{41,42} Interestingly, although other studies have demonstrated the importance of need variables in mental health care utilization,^{10,15–18} the current study did not replicate those findings, possibly because our entire sample had high need due to the presence of both PTSD-related symptoms and hazardous alcohol use necessary for inclusion.

If employment is considered an external barrier to mental health care, system-level changes can be made to improve access. Specifically, expanding nontraditional hours (e.g., weekends and evenings) might improve access for Veterans who have conflicts due to work schedules, and brief short-term behavioral treatments such as those traditionally delivered in primary care might be easier to arrange during lunch breaks for individuals with concerns about time off from work. Research suggests that office management practices including weekend and evening appointments and open access scheduling are important to patients and are consistent with patient preferences.^{43,44} The current findings also suggest unemployment and low social support as additional needs of Veterans utilizing mental health care. Although these domains are not traditional treatment targets, they are important indicators of functioning and quality of life. Increased recognition of these domains within this population and referral to appropriate services might be particularly beneficial for Veterans with PTSD and problem drinking. Within VA, implementation of Veteran peer support and vocational rehabilitation programs have been associated with high patient satisfaction and improved patient outcomes.^{23,45–47}

Strengths of the current study are the prospective design, which allows us to establish temporal precedence and the breadth of variables included in the model. One of the primary weaknesses of the current study is the exclusion of participants who did not complete the full follow-up period because we were unable to accurately classify their treatment utilization status during the follow-up period because of their missing data. Despite this rationale, this might have excluded some participants who might face the same barriers to mental health care utilization as research study participation. Also, although VA/DOD service utilization was confirmed via electronic medical record review, we are unable to verify other service utilization. An additional weakness is limitation to one geographic region may restrict generalizability to regions where population and environmental characteristics may differ.

CONCLUSIONS

The current study indicates that negative mental health beliefs, employment, and social-leisure functioning all have a negative relationship with mental health care utilization for Veterans with PTSD and problem drinking. These findings

make a significant contribution to the literature because negative mental health beliefs and self-reported social-leisure functioning have rarely been examined within the Behavioral Model as predictors of mental health care utilization. Interventions such as cognitive behavioral therapy for treatment seeking and motivational interviewing might benefit Veterans who demonstrate negative beliefs about mental health. Additionally, these findings demonstrate the importance of considering other aspects of Veterans' experiences in treatment planning including employment and social-leisure functioning. Adding Veteran peer support and vocational rehabilitation programs to traditional mental health services may increase utilization and improve health outcomes for combat Veterans.

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